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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:)	Examiner: V. MANOHARAN
11. SALMISUO)	
)	Art Unit: 1764
Serial No.: 09/831,213)	
)	Confirmation: 2635
Filed: May 3, 2001)	
)	
For: METHOD AND DEVICE FOR)	
TREATING WATER FOR)	
EVAPORATION)	
)	
Date of Last Office Action:)	
April 11, 2003 (July 21, 2003))	
)	
Attorney Docket No.:)	Cleveland, OH 44114
4EDZ 2 1233 US)	July 31, 2003

*02 to enter
9/10/03*

AMENDMENT C (AFTER FINAL)

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Commissioner For Patents
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Alexandria, VA 22313-1450

Dear Sirs:

This amendment is responsive to the Advisory Action of July 21, 2003. The July 9, 2003 Amendment was not entered, the Examiner pointing out several language inconsistencies which needed to be resolved. Amendments to the specification begin on page 2.

Please amend the claims to resolve these inconsistencies and to add new apparatus claim 13 which parallels method claim 6 more closely, such that the claims starting on page 3 will read as follows:

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Please amend the paragraph on page 2, spanning lines 20-28 to read as follows:

~~The method according to claim 1 has now been invented for distributing~~ According to one aspect of the invention feed-water is effectively distributed to the beginning of the heat-transfer surfaces of a falling film evaporator by removing the gases dissolved in the water and preventing them from re-dissolving at the same time. ~~Another object of the invention is the device according to claim 2 which makes it possible~~ In accordance with another aspect, in a falling film evaporator, in the same operation, ~~to remove the gases~~ are removed from the feed-water and ~~to~~ it is distributed it evenly into the tube bundle of the evaporator. The apparatus comprises an evaporator top and at least one spraying device arranged therein. In this case, the spraying device is a nozzle, a mist sprayer or a similar device for creating a spray of liquid of a given shape.

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1. (Cancelled)

2. (Cancelled)

3. (Currently Amended) An apparatus ~~as defined in claim 2~~ further including for removing dissolved gases from water to be evaporated in connection with a falling film evaporator, which apparatus comprises:

5 an arrangement of vertical evaporator channels which convert water passing therethrough into vapor;

a trough having a perforated bottom, the trough lying above the an upper end of the evaporator channels arrangement;

10 at least one spraying device for breaking heated feed-water into a spray of droplets having a spray pattern substantially corresponding to an area of the upper end of the evaporator channels arrangement; and,

15 at least one separated gas outlet for the removal of gases separated from the sprayed droplets prior to the droplets entering the upper end of the evaporator channels arrangement reducing dissolved gas contamination of the vapor.

4. (Currently Amended) The apparatus as defined in claim ~~2~~ 3 further including:

5 a substantially hemispherical chamber covering the upper end of the evaporator channel arrangement such that the upper end of the evaporator channel arrangement forms a plane side of the hemispherical chamber; and,

the separated gas outlet being defined in the hemispherical chamber for removing the separated gases before they can enter the evaporator channel arrangement.

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5. (Previously Presented) The apparatus as defined in claim 3, further including:

a chamber covering the upper end of the evaporator channel arrangement, the separated gas outlet being defined in the chamber.

6. (Currently Amended) A method of feeding water to heat transfer surfaces of a falling film evaporator having vertical evaporation channels having upper and lower ends, the method comprising:

5 spraying drops of water with absorbed atmospheric gases to distribute the water over the upper ends of the vertical evaporation channels of the falling film evaporator;
simultaneously with the spraying, (1) separating the atmospheric gases from the water and (2) discharging the
10 separated atmospheric gases such that the atmospheric gases are removed from the water and the water is distributed over the upper ends of the vertical evaporation channels;

evaporating the water from which the atmospheric gases have been removed in the vertical evaporation channels to
15 generate water vapor with reduced atmospheric gas contamination;
and,

discharging the water vapor with reduced atmospheric gas contamination from the lower ends of the vertical evaporation channels separately from the separated gases, and
20 maintaining the water vapor separate from the separated gases to prevent dilution of the water vapor with whereby re-dissolution of the separated gases is prevented.

7. (Original) The method as defined in claim 6 further including:

collecting the sprayed droplets into a layer of water above the upper ends of the vertical evaporation channels;
5 separating additional atmospheric gases from the water layer;

feeding water from the water layer into the upper ends of the vertical evaporation channels.

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8. (Cancelled)

9. (Currently Amended) The apparatus as set forth in claim ~~8~~ 10 wherein the vertical evaporating channels upper end arrangement is confined to a circular area and ~~further including a hemispherical~~ the chamber mounted to the vertical
5 evaporating channels upper end arrangement is hemispherical.

10. (Currently Amended) The An apparatus as ~~defined in claim 8 further including for removing dissolved atmospheric gases from water,~~ the apparatus comprising:

a falling film evaporator which includes a plurality
5 of vertical evaporating channels, the vertical evaporating channels having upper ends arranged in an evaporator channel upper end arrangement for receiving water to be vaporized, product vapor exiting from a lower end of the evaporator channels;

10 a chamber covering the evaporator channels upper end arrangement;

a perforated plate mounted in the chamber above and separated from the evaporator channels upper end arrangement;

15 at least one spraying device disposed in the chamber to break the water into a spray of droplets, the spray of droplets being sprayed onto the plate, the water passing through perforations in the plate to the evaporator channel upper ends;
and

20 at least one dissolved gas outlet from the chamber for removal of the atmospheric gases separated from the water droplets during spraying before the water droplets enter the evaporating channels, such that the product vapor has a lower concentration of atmospheric gases than the water.

11. (Cancelled)

12. (Cancelled)

13. (New) An apparatus for feeding water to heat transfer surfaces of a falling film evaporator having vertical

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evaporation channels having upper and lower ends, the method
5 comprising:

a separated gas outlet disposed over the upper ends
of the vertical evaporation channels;

a means for spraying drops of water with absorbed
atmospheric gases to distribute the water over the upper ends
10 of the vertical evaporation channels of the falling film
evaporator such that simultaneously with the spraying, (1) the
atmospheric gases are separated from the water and (2) the
separated atmospheric gases are discharged through the separated
gas outlet such that the atmospheric gases are removed from the
15 water and the water is distributed over the upper ends of the
vertical evaporation channels;

the vertical evaporating channels evaporating the
water from which the atmospheric gases have been removed to
generate water vapor with reduced atmospheric gas contamination
20 which water vapor with reduced atmospheric gas contamination is
discharged from the lower ends of the vertical evaporation
channels separately from the separated gases, whereby
re-dissolution of the separated gases is prevented.